Application No. 09/997,643
Amendment "A" and Response dated May 9, 2006
Reply to Office Action mailed January 6, 2006

REMARKS / ARGUMENTS

The present Amendment is in response to the Office Action mailed January 9, 2006. Claims 24-35, 38, 41, 46, and 53 are amended. Claims 24-53 are now pending in view of the above amendments.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references. In addition, Applicants request that the Examiner carefully review any references discussed below to ensure that Applicants understanding and discussion of the references, if any, is consistent with the Examiner's understanding. Reconsideration of the application is respectfully requested in view of the above amendments to the claims and the following remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

Claim Rejections Under 35 U.S.C. § 102

The Office Action rejected claim 53 under 35 U.S.C. § 102(b) as being anticipated by *Ohran* (U.S. Patent No. 5,835,953). Anticipation requires that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, (Fed. Cir. 1987). The following discussion illustrates that *Ohran* does not satisfy *Verdegaal* with respect to claims 53. More particularly, because *Ohran* does not teach or suggest each and every limitation of the claim 53 as those limitations are set forth in claim 53, *Ohran* does not teach or suggest claim 53.

As noted in the specification, the ability to access accurate data is a vital part of many business operations. As a result, there is a need to reliably backup data. Often, there are many files such as swap files, printer buffers, temp files, etc. that are not desirable to backup. Backing up these files can consume processing cycles, communication bandwidth, and backup memory capacity. *See* specification, ¶[0003].

Embodiments of the invention overcome some of these problems by providing systems and methods for backing up data for only those data blocks that are desired to be protected.

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Advantageously and by way of example only, this reduces the amount of data needed to make a backup, provides a more efficient user of the storage area, and also enables the frequency of backups to be increased if desired because the amount of data being backed up is reduced. *See* specification ¶[0008].

Claim 53 has been amended to require "receiving information identifying first data blocks to include in the snapshot copy and identifying second data blocks to exclude from the snapshot copy". Support for this amendment can be found, by way of example, in Figures 3 and 4, and in the specification at ¶¶[0067]-[0072]. For example, Figure 3 of the present application illustrates a protection map 53 in addition to a snapshot map and a backup map. As noted in the specification, the protection map 53 can include information identifying which data blocks are desirable for backup and which are not desirable for backup. *See* ¶[0067]-[0068]. Claim 53 requires including first data blocks in the snapshot copy while excluding second data blocks from the snapshot copy.

In contrast, this requirement is not taught or suggested by *Ohran*. For example, Figure 3 of *Ohran* only illustrates a snapshot map 52 and a backup map 48. A protection map that enables data blocks to be included or excluded from a snapshot is not depicted or discussed. For instance, *Ohran* teaches that the snapshot map 52 is used to identify which blocks have been preserved and may be overwritten. For example, *Ohran* states that "one preferred embodiment preserves a static snapshot by copying a data block that is to be overwritten from mass storage device 20 into snapshot storage 22 and then indicating that the block has been preserved in snapshot map 52 . . . . [T]he copy of the data block on the mass storage device 20 can [then] be overwritten." *See* col. 14, lines 1-7. The backup map 48 may "comprise a Boolean entry for each storage location on the mass storage device 20." *See* col. 13, lines 22-24. When a storage location has new data written in it, the entry for the storage location may then be set. *See* col. 13, lines 24-26.

Thus, the snapshot map 52 and the backup map 48 taught by *Ohran* fail to teach or suggest the requirement in claim 53 of "receiving information identifying first data blocks to include in the snapshot copy and identifying second data blocks to exclude from the snapshot copy".

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For at least these reasons, *Ohran* fails to teach or suggest all of the limitations of claim 53 as set forth in claim 53. As a result, Applicants respectfully submit that claim 53 overcomes the art of record and is in condition for allowance.

Rejections Under 35 U.S.C. § 103

The Office Action also rejected claims 24-52 under 35 U.S.C. § 103(a) as being unpatentable over U.S. 6,434,681 (*Armangau*) in view of *Ohran*. The following discussion illustrates that the cited art fails to satisfy a *prima facie* case of obviousness.

Claim 24 has been amended to require that information from a user designates first data blocks to be include in a snapshot copy and designates second data blocks to exclude from the snapshot copy. As discussed above, the ability to exclude certain data blocks in a backup has several advantages including, by way of example, reducing the amount of data needed to make a backup and providing a more efficient user of the storage area.

This requirement of receiving information specifically designating first data blocks to be included in a snapshot copy and designating second data blocks to exclude from the snapshot copy is not taught or suggested by either *Armangau*. Generally, *Armangau* is directed to a snapshot facility for a data storage system that permits continued host read/write access to data storage that has been snapshot copied. *See* col. 1, lines 5-10. The process of performing a backup of an extent is illustrated in Figure 8A *Armangau*, which illustrates the procedure invoked in response to a backup command from a host. *See* col. 16, lines 17-19.

More particularly, Figure 8A illustrates a method for a backup of a production volume extent. *Armangau* teaches a bit map to indicate modified tracks in an extent. *See* Figure 5. Figure 8A illustrates that <u>all</u> of the tracks of the production volume extent are examined to determine if the tracks should be copied during a backup of an extent based on the bitmap. Thus, *Armangau* may not copy each track each time a backup occurs. However, these tracks or data blocks have not been excluded from backup as required by claim 24 because they would be copied if they had changed according to *Armangau*. Data blocks excluded from backup are not backed up even if they change. More particularly, excluding data blocks from the snapshot copy indicates that the data blocks are not included in the snapshot copy even if they have changed.

Thus, there is no teaching or suggestion in *Armangau* that some of the tracks are excluded from the backup and claim 24, among other things, requires <u>including designated first</u>

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data blocks in a snapshot copy and excluding designated second data blocks from the snapshot copy. Thus, *Armangau,* fails to teach or suggest claim 24 as presented herein. *Ohran,* as discussed previously, fails to remedy the deficiencies of *Armangau.*

For at least these reasons, Applicants respectfully submit that claim 24 is in condition for allowance and overcomes the cited art.

Claims 35, 41, and 46 have been similarly amended. Claim 35, for example, requires "preserving the designated subset of the data blocks . . . without preserving a second subset of the data blocks that are not designated for backup in the snapshot copy." Claim 41 requires that "second data blocks are not included in the in the instruction to create a snapshot copy". Claim 46 requires that "a particular subset of the data blocks stored in the mass storage device are excluded from backup in the snapshot copy".

As discussed above, the requirement to include some data blocks while excluding other blocks from a snapshot copy, among other things, is not taught or suggested by the prior art

Applicants respectfully submit that claims 35, 41, and 46 are therefore in condition for allowance for at least the above reasons. The dependent claims 25-24, 26-40, 42-45, and 47-52 also overcome the cited art for at least the above reasons.

Conclusion

In view of the foregoing, Applicants believe the claims as amended are in allowable form. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner's Amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 9th day of May 2006.

Respectfully submitted,

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